

Eastern & Southern MT Oil and Gas Development

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Montana Ambient Air Quality
Monitoring Network Assessment and Plan
Annual Stakeholder Meeting
March 9, 2009



Monitoring Stations

- **Sidney, Montana**
 - Current monitoring site
 - Oil & gas development
- **Powder and Tongue River Air Sheds**
 - 2 Proposed monitoring sites
 - Coal bed natural gas development



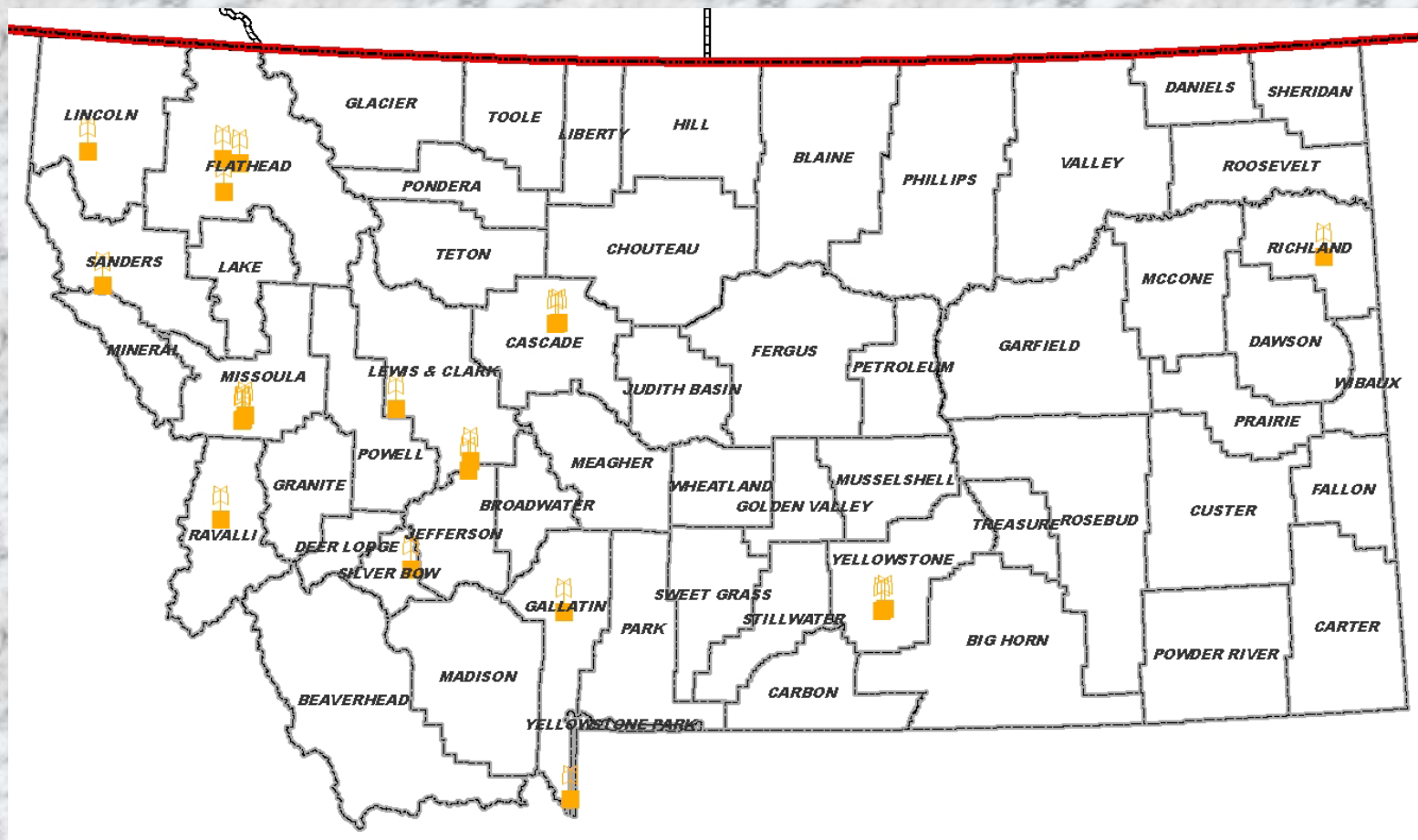
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Sidney Monitoring Station

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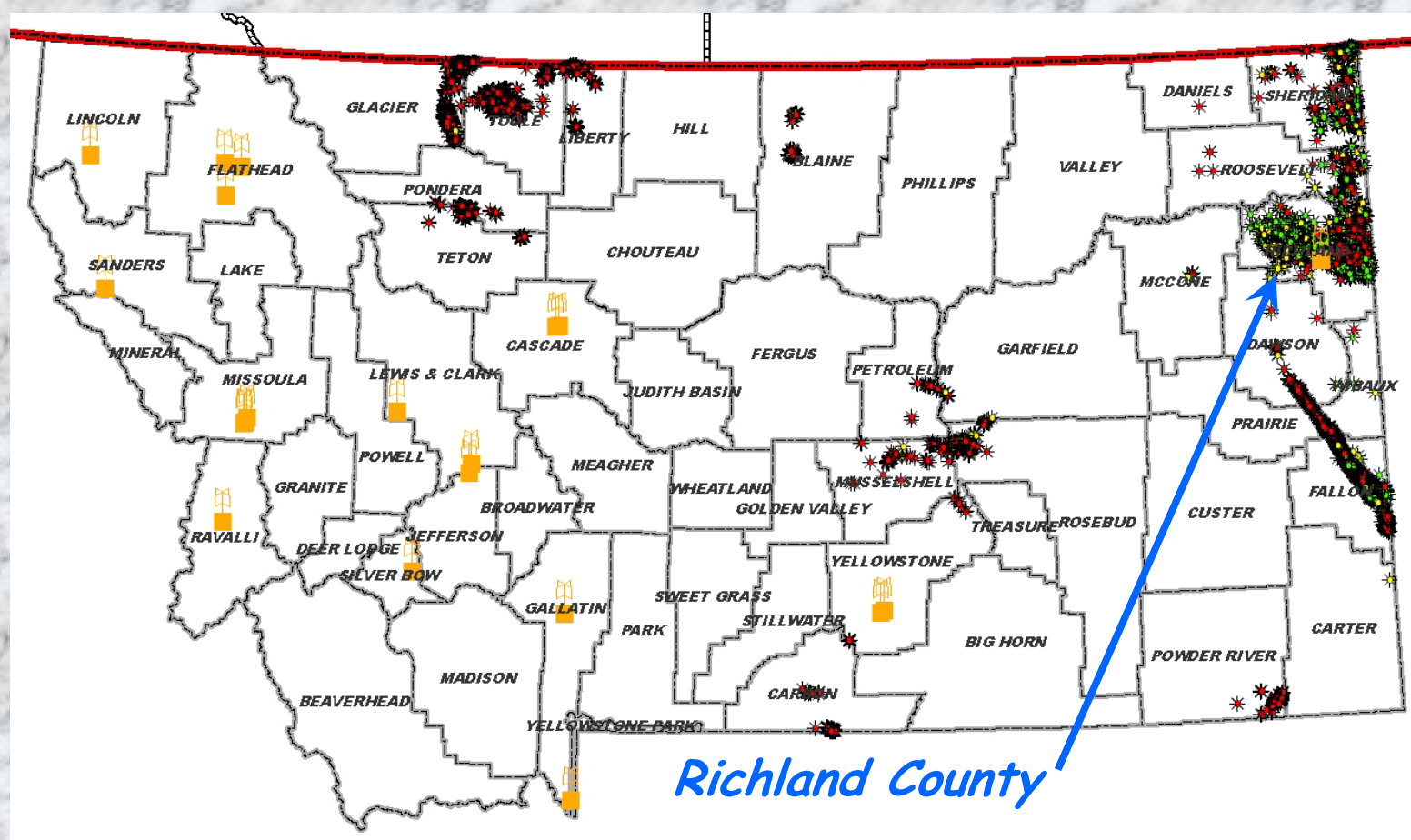
DEQ Monitoring Stations



Monitor, assess and provide information on statewide ambient air quality conditions and trends as specified by the Montana and Federal Clean Air Acts.

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Montana Oil & Gas



771 Registered Facilities (2/25/09)

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Oil & Gas Production in E Montana

- Bakken Formation
 - Estimated 3.0- to 4.3-billion barrels recoverable oil (April 2008 USGS report)
- Richland County
 - 99% of all the oil activity in Montana (*Tom Richmond; Montana Board of Oil and Gas Conservation*)
 - Elm Coulee Oil Field
 - Production began in 2000
 - Expected to produce 270-million barrels
 - 2007-Elm Coulee averaged 53,000-bpd

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Montana Department of
ENVIRONMENTAL QUALITY

Richland County Active Sources

- Over 550 Active Sources
 - *Petroleum Production*
 - *Nat. Gas Compressor Stations*
 - *Mining*
 - *Power Generation*
 - *Manufacturing*
 - *AG Storage*



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Future O&G Production in MT



	Montana	Richland County
Producing	3982	848
Spudded	116	62
Permit to Drill	70	21

- Montana Board of Oil and Gas Online Database - 3/2/09

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Sidney Monitoring Station

- Characterize air quality in predominant oil & gas development area
- Monitors:
 - NO_x
 - Ozone (O₃)
 - PM_{2.5}
 - PM₁₀
 - Meteorological Data



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Sidney Pollutants of Concern

- NO_x and PM_{2.5}
 - RICE emissions
- PM₁₀
 - RICE emissions
 - Surface disturbance (e.g., vehicle traffic)
- Ozone
 - VOCs react with NO_x to form O₃
 - VOCs typically highest emitted pollutant at oil and gas facilities



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Learning from the Past

- March 2008: EPA lowers ozone standard from 80-ppb to 75-ppb
 - Typically a concern in summer months
 - Los Angeles peak average of 152-ppb last summer
 - Estimates 345 counties not able to meet new standard
 - Implementing nationwide → \$8 billion per year by 2020
- Wyoming Ozone Problems
 - Upper Green River Basin: Elevated levels 3 of last 4 winters
 - Winter 2007-08: WDEQ issues 1st ozone warning
 - Measured ozone level of 122-ppb during 8-hour period
 - Exceeded healthy levels 11 times between Jan and May
 - February 2009: 1st ozone advisory of winter

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Learning from the Past contd.

- **Colorado Ozone Problems**
 - Denver exceeds federal limits on 9 days in summer 2006
 - Colorado began its first program to control oil and gas field emissions
- **Four Corners Ozone Problems**
 - Air monitors indicate ozone levels average 77-ppb
 - EPA could classify portions as non-attainment areas
 - States will have until 2013 to come up with a plan to reach attainment
- **Common Thread → Ongoing Oil & Gas Development**

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Need for Sidney Station

- Monitor air quality in area that has seen and is expected to see significant oil and gas development
- Currently Department's only site that monitors ozone
- Accurate data for permit actions
- Prevent future air quality problems
 - Monitor compliance with MAAQS/NAAQS
 - Implement programs prior to exceeding limits

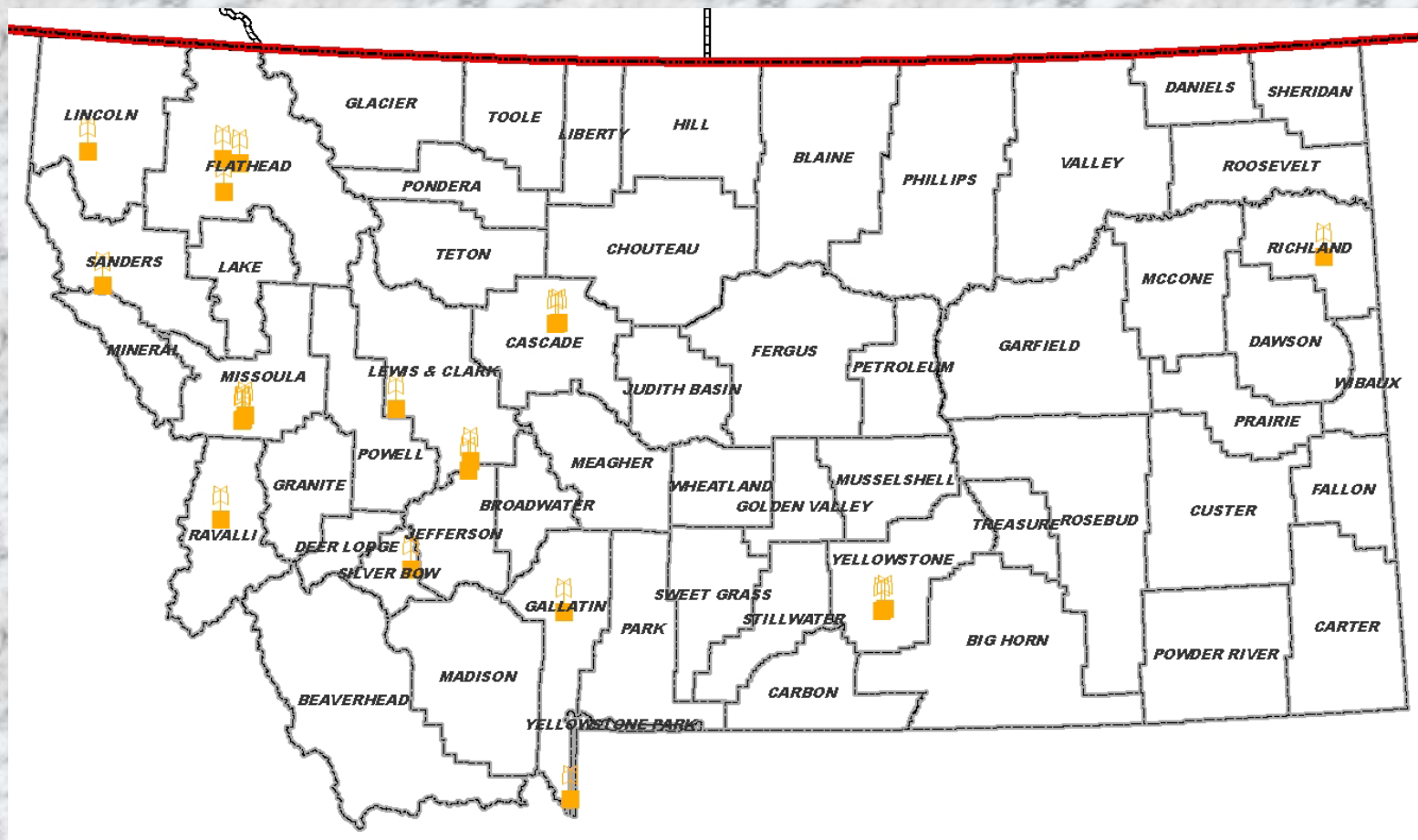
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Air Monitoring Stations Powder and Tongue River Air Sheds

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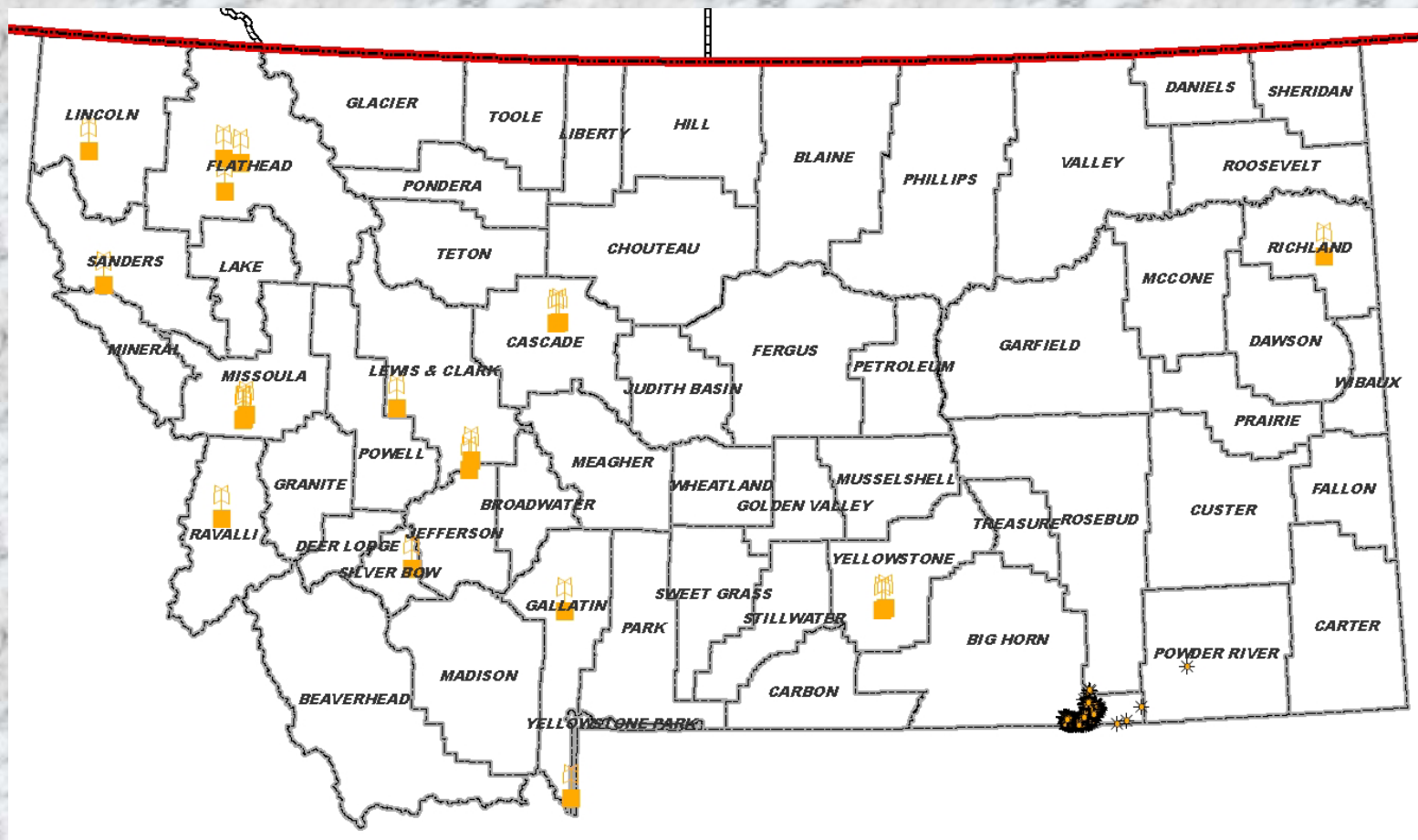
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Montana Coal Bed Natural Gas



828 Producing Wells (2/25/09)

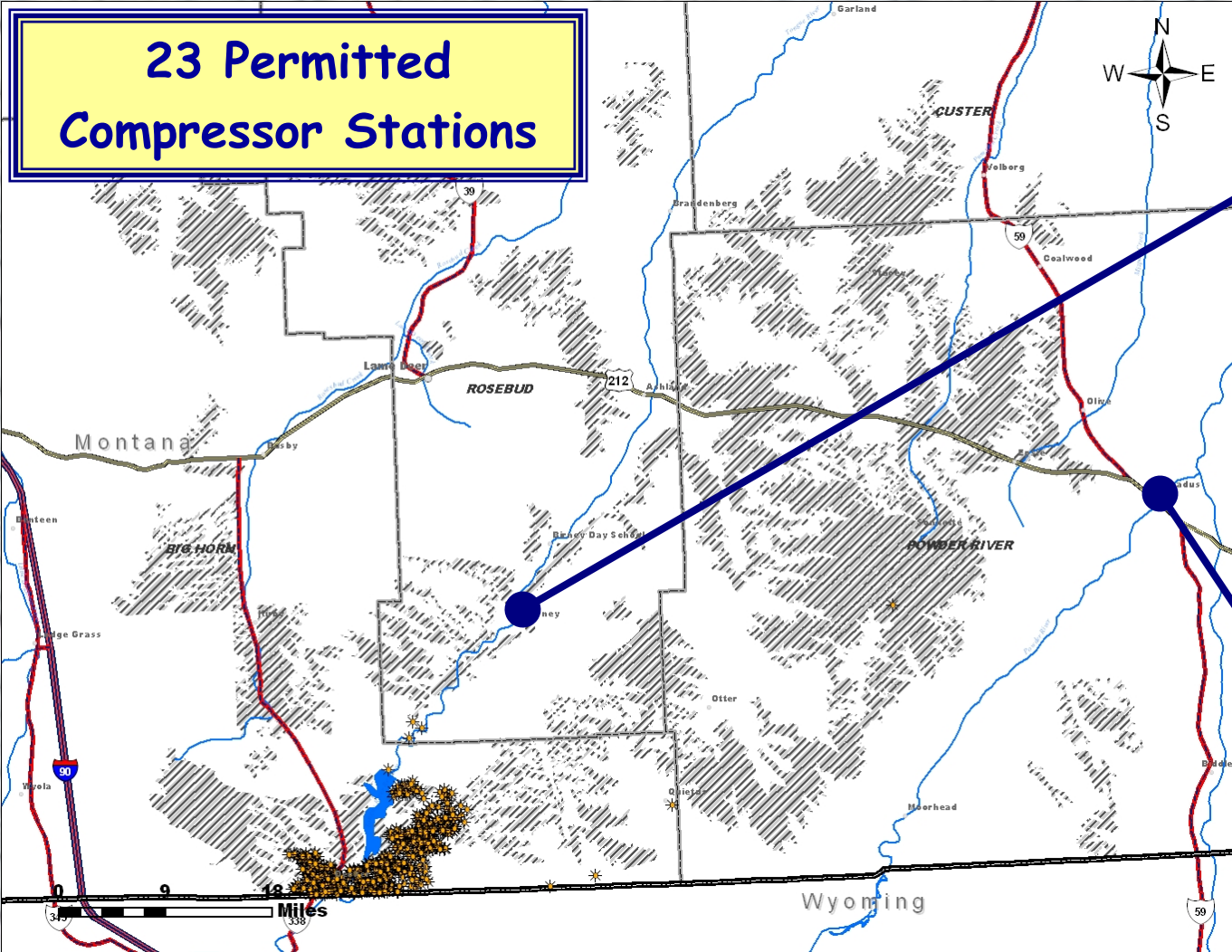
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CBNG Production in Montana

- Powder River Basin
 - Estimated 24-TCF of recoverable CBNG
 - 90-95% of CBNG reserves in WY (8.24- to 22.42-TCF)
 - 5-10% of CBNG reserves in MT (0.8- to 2.5-TCF)
 - Full development scenarios
 - 40,000 wells in WY
 - <10,000 wells in MT



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Monitoring Parameters

- Contaminants

- NO_x
- Ozone (O₃)
- PM_{2.5}
- PM₁₀



- Meteorological Data



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Powder & Tongue River Monitoring Stations

- Characterize/monitor air quality in area of potential significant CBNG development
 - "Baseline" or "Background" air quality data
 - Monitor compliance with MAAQS/NAAQS
 - Allows for future development to be accurately analyzed
- Working in conjunction with BLM

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